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(71) Applicant
Richard Bartley Whiteside,
43 Carrgreen Close, Burnage, Manchester

(72) Inventor
Richard Bartley Whiteside

(74) Agent and/or Address for Service
D. Young & Co.,
10 Staple Inn, London WC1V 7RD

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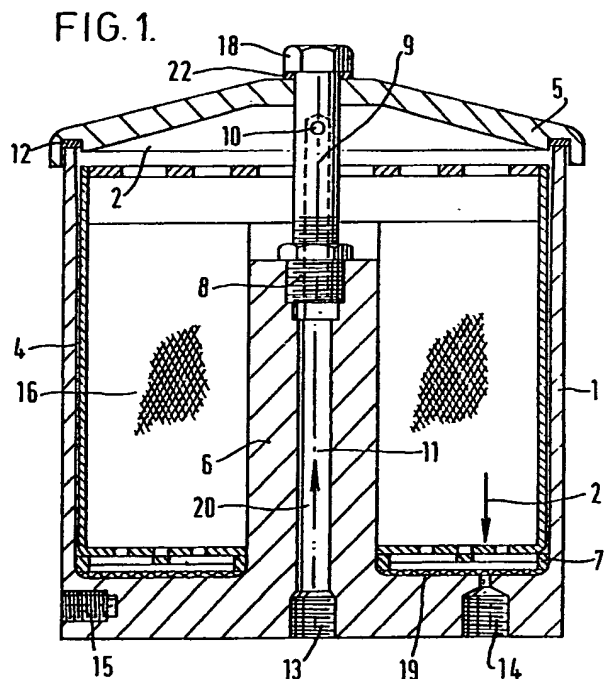
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B1D

(54) Oil cleaner

(57) An oil cleaner comprises a generally cylindrical housing 1 having a closed base, an open top and a central core 6 integral with and projecting upwardly from the base. A filter element 16 of the toilet roll kind surrounds the core 6 and a gasketed top cover 5 closes and seals the open top. The top cover is secured in place by a bolt 18 extending downwardly into threaded engagement with the core 6, the core having a passageway 11 for oil to be filtered entering the housing through the base. This passageway 11 communicates with a further oil passageway 9 in the bolt 18 which opens into the interior of the housing above the filter element 16 whereby in use oil can be transmitted under high pressure to the top of the filter element.



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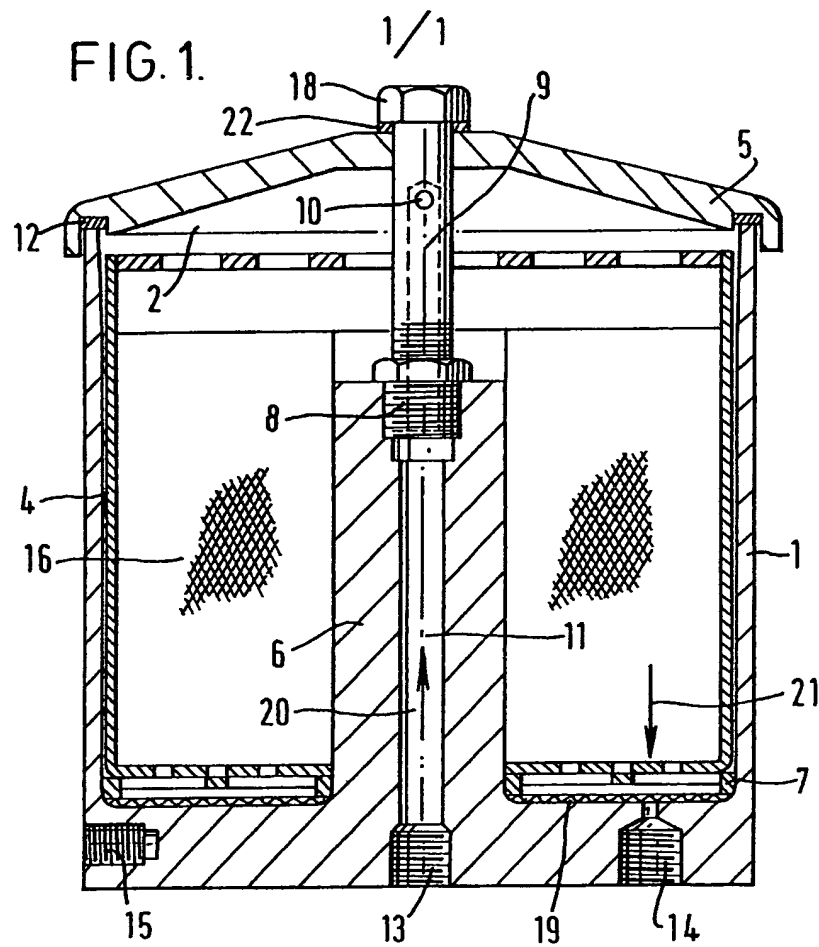
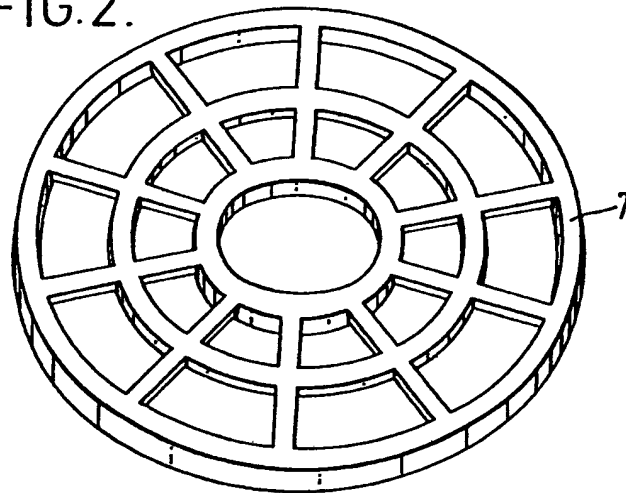


FIG. 2.



SPECIFICATION

Oil cleaner

- 5 This invention relates to an oil cleaner, and more particularly to an oil cleaner for use with an internal combustion engine.

According to the present invention there is provided an oil cleaner comprising a generally cylindrical hollow housing having a closed base, an open top, and a substantially central core integral with and projecting upwardly from the base, a filter element surrounding the core, and a gasketed top cover closing and sealing the open top, the top cover being secured in place by a substantially central bolt extending downwardly into threaded engagement with the central core, the central core having a passageway for oil to be filtered entering the housing through the base which passageway communicates with a further oil passageway in the bolt, and the passageway in the bolt opening into the interior of the housing above the filter element whereby in use oil can be transmitted under high pressure to the top of the filter element.

- 25 The securing bolt is preferably a 'banjo' bolt.

A separate "press fit" apertured support plate is located at the base to provide filter element support and to provide oil to escape to an outlet in the base for filtered oils.

- 30 The open top of the oil cleaner housing provides easy access to permit the removal of the filter element and insertion of a replacement element directly through the top of the housing. This also prevents oil spillage.

- 35 In the interest of economy of operation the filter element chosen if of a high quality wet strength two ply tissue, tightly wound to an inner core of board. The filter element may be encased in metal or plastic or it may be cotton wrapped. Furthermore it should be of a size externally to enable it to be tightly inserted into the housing of the oil cleaner around the central core.

By the use of this oil cleaner, it has been found that the present widely accepted practice of changing the sump oil in an internal combustion engine, for example in cars and commercial vehicles, may now be substantially reduced in frequency or eliminated, permitting the same oil which may be used again and again during the engine life. It has been proven that oil does not wear out but merely becomes unfit for use due to contamination. The oil cleaner according to the invention functions to keep the oil clean and thereby extends the engine life. The filter element will not remove desired additives from the oil, but it will remove the sulphuric acid formed by the moisture produced at the combustion stroke of an engine combining with the sulphurous gases common in the burning of diesel and other fuel oils.

- The invention will be more fully understood from the following description of an embodiment thereof, given by way of example, only with reference to the accompanying drawings, in which:

Figure 1 is a front elevation in section of one embodiment of an oil cleaner according to the invention; and

Figure 2 is a perspective view of a support plate for use in the oil cleaner of Figure 1.

- Referring to Figure 1 there is indicated an oil cleaner according to the invention and which comprises a generally cylindrical hollow oil cleaner housing 1 which is of diecast aluminium, steel or other suitable metal, the body 1 having a closed base and an open top. An upwardly tapered central core 6 projects upwardly from the base and forms an integral part of the housing 1. The top end of the core 6 has threaded therein a steel insert 8, into which in turn is threaded a downwardly extending central 'banjo' bolt 18.

- A gasketed lid or top cover 5 is secured to the open top of the housing 1 by the bolt 18 being screwed down tightly into the insert 8. A neoprene seal 12 and a further sealing washer 22 are provided as gaskets to ensure that there are no oil leaks under pressure.

- 85 A micromesh screen 19 is located in the base of the body 1 under an apertured annular support plate 7 (see also Figure 2) which is a press fit between the inner surface of the housing 1 and the outer surface of the core 6. An open top area 2 is provided within the housing 1 above the filter element 16 into which area contaminated oil to be filtered is sprayed through an aperture 10 in the securing bolt 18 as will be described.

- A pair of fixing holes 15 are provided for securing the body 1 to an engine (not shown) the fixing holes 15 (only one of which is shown) being diametrically opposed and in line with, or at 90° with respect to, a threaded oil inlet aperture 13 and a threaded oil outlet aperture 14. In use oil to be filtered enters the body 1 via the oil inlet aperture 13 and is conveyed under pressure in the direction of the arrow 20 through an axial oil passageway 11 in the core 6 to a communicating axial oil passageway 9 in the bolt 8, and is thence sprayed over the top of the filter element 16 through the aperture 10 which is above the element 16 and communicates with the oil passageway 9.

- The filter element 16 is a paper wound element which is encased in a casing 4 removable from the housing 1 as a unit with the filter element. The element 16 in its casing 4 is dimensioned to be a tight fit in the annular space between the outer wall of the housing 1 and the core 6, and an O-ring may be used on the central core 6 to seal against the filter element. Oil passes down through the filter element 16 in the direction indicated by the arrow 21 and thence through an aperture 17 which is an oil flow control. The latter aperture 17 can be enlarged or decreased according to the particular application of the oil cleaner. The cleaned oil leaves the body 1 through the outlet aperture 14 and is returned to a sump or reservoir (not shown).

CLAIMS

1. An oil cleaner comprising a generally cylindrical hollow housing having a closed base, an open top, and a substantially central core integral with and projecting upwardly from the base, a filter element surrounding the core, and a gasketed top cover

- closing and sealing the open top, the top cover being secured in place by a substantially central bolt extending downwardly into threaded engagement with the central core, the central core having a
- 5 passageway for oil to be filtered entering the housing through the base which passageway communicates with a further oil passageway in the bolt, and the passageway in the bolt opening into the interior of the housing above the filter element
- 10 whereby in use oil can be transmitted under high pressure to the top of the filter element.
2. An oil cleaner as claimed in claim 1, wherein the securing bolt is a banjo bolt.
3. An oil cleaner as claimed in claim 1 or 2,
- 15 wherein an apertured annular plate is provided adjacent the base of the housing below the filter element, the plate permitting oil passing down through the filter element to escape through an oil outlet in the base.
- 20 4. An oil cleaner substantially as described with reference to the accompanying drawings.